plane
GRUMMAN
news

WELCOME HOME!

"If we don't do anything else, let's get back up to Grumman and say 'Thanks'."

If Navy Capt. Jim Lovell Jr. had said no more than just that, the thousands of Grummanites gathered on the airstrip near Plant 4 on May 5 might have been content . . . well, almost.

But there was more from Lovell, Fred Haise Jr., and Jack Swigert Jr. The throng ate it up. There was a feeling—and it was deep, as witness the wet eyes of many a spectator—that these three men had so captured the imagination of their listeners that speeches and chit-chat could have run on for hours.

The crowd, in short, was at the astronauts' disposal. And part of the magic of that feeling flowed from the obvious sincerity of the three men who came so close to the edge of disaster and yet waved it away, landed safely, and now stood—remarkably poised—before the Grumman people who made their "lifeboat," Aquarius.

Yet, there was something more, something deeper than the words of praise from the space trio. The **real concern** was obviously elsewhere. It was voiced humbly, compassionately by Chairman of the Board Clint Towl:

"Isn't it good to have 'em back!"

Indeed it was!

Towl's words released the pentup tension—tension that many weren't aware of till then. The applause, spirited before, exploded.

(Continued on page 7)

Homecoming day. **Jim Lovell, Fred Haise, and Jack Swigert stand high above throng at Plant 4 after thousands of Grummanites had given the Apollo 13 crew a thunderous welcome to Bethpage. At left is model of Lunar Module. The three astronauts rode LM-7, 'Aquarius,' almost all the way home last month from near-disaster in space. (Photo by Walt Hudson)**

Vol. 29, No. 9, Bethpage, N. Y. May 11, 1970

Time of trial— tests, and more tests, for F-14

By first flight, the F-14 will have experienced the most exhaustive test program applied to any Grumman design.

We're currently conducting the static and fatigue tests of two of the most significant structural features of the F-14:

- A unique wing pivot and adjacent electron-beam welded titanium wing box
- A boron stabilizer, which improves stabilizer stiffness while also cutting weight

These are vital not simply because they're crucial to the F-14's design and performance (which they are) but because they're "first time" aircraft applications.

So far, both have passed muster, but a rugged ground testing road lies ahead. And after all that, naturally comes a stretch of flight testing to prove the aircraft's structural integrity.

Since the F-14 is a variable-sweep wing aircraft, it has by nature greater flexibility than a fixed-wing plane; when the wings are fully extended the aircraft can take off or land on a carrier deck at low speeds; when the wings are swept back it flies much faster. As for the in-between flight regimes, the wing positions automatically sweep according to flight conditions, thus permitting the F-14 to dogfight. Since the sweep capability depends in large measure on the quality of the wing-pivot mechanism, the pivot must be tested exhaustively.

A wing pivot static test—that is, one loaded incrementally to meet required test conditions—began last November and was completed satisfactorily quite recently. A fatigue test series of the pivot design was started last month and will be finished in mid-July.

Static (stationary) tests of the boron stabilizer are in process and will be completed last month. Fatigue tests of a second stabilizer will run from May through July.

Getting back to the wing pivot, Larry Makemson, group engineer in Structural Test, says, "The wing pivot is an improved version of our original F-14 design. What we did was to use slices of polished chromium-coated steel balls—two for each side of the wing—that ride on a teflon strip 12/1,000 of an inch thick. Many tests were run in the Plant 12 Materials Lab, and in Plant 31 with larger rigs of the same design. Then we went to the full-scale model."

Both full-scale test series have been subcontracted to Vought Aeronautics, which has an extensive wing-sweep load-test stand and data facility at Dallas, Tex. Two types of tests are to be made there: a strain gauge survey of the prototype wing pivot structure, and an evaluation of friction and structural suitability of the pivot bearing. During the test series, many different loads are placed on each of seven different wing positions—from 20 degrees to a 68-degree sweep simulating the F-14 in fast flight. In other words, to find out what happens to the wing at different loadings and flight positions takes a lot more testing than would be required with a fixed-wing aircraft; in fact, in ratio of about 10 to one.

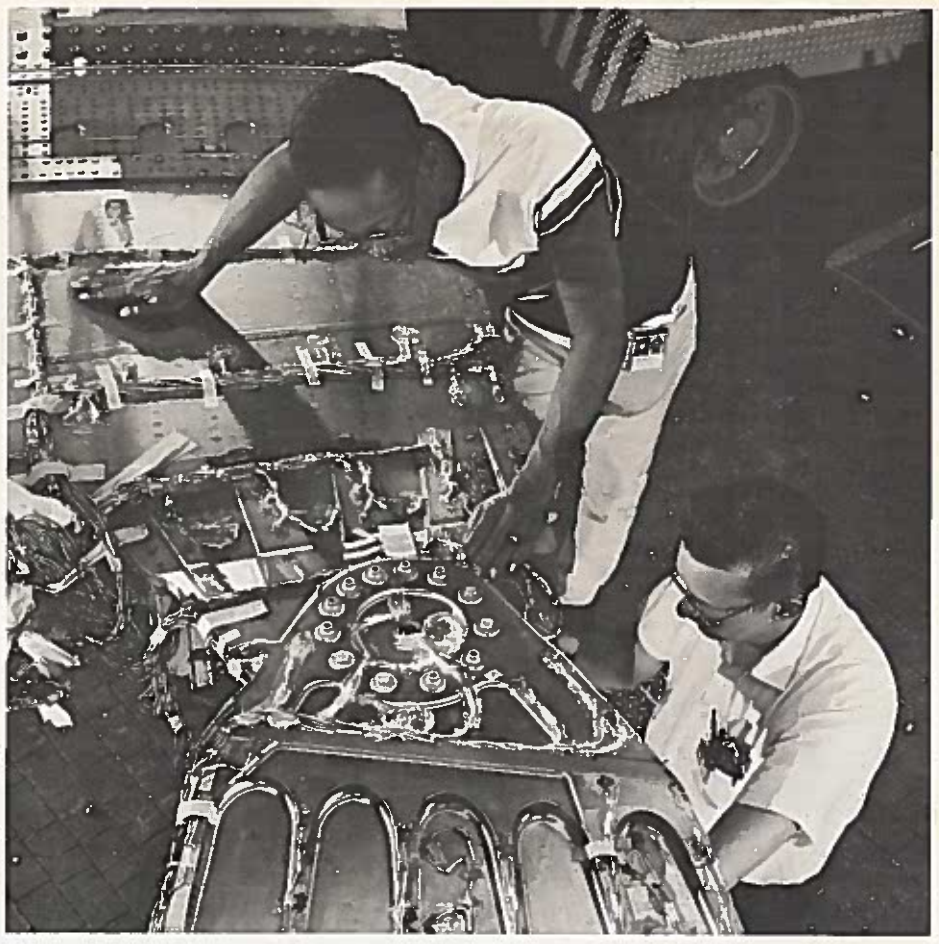
Why swing-wing?

In light of just the number of complex tests that have to be made when you're building a variable-sweep wing aircraft, why build one at all? Why not stick to the conventional fixed-wing concept? Jerry McFarland, assistant group engineer, states the case succinctly:

"We get the best of two different designs. The aircraft with wings extended is ideal for takeoff and carrier landings; the swept-wing configuration for supersonic flight."

The tests themselves will mirror what the F-14 will "see" in actual flight and beyond. For example, static test loads are applied to 125 percent of the design limit at seven different sweep angles; and operational sweep tests are run in sub-zero temperatures to simulate high-altitude and arctic conditions, and, at 100 percent load limit, to measure the force needed to move a wing. This imposes the worst possible wear conditions.

"The test results have been very gratifying," McFarland says. "The one problem we encountered turned out not to be a serious one: All we had to do is make sure that the teflon liner is properly bonded. It was that simple."



Inspection. Clint Brown of Fuselage Assembly and Al Mahoski of Inspection check wing sweep pivot area. Later, there'll be operational sweep tests.

Fatigue test

Next on the docket is a fatigue test designed to give a comprehensive fatigue evaluation of a major portion of the wing pivot structure. The tests are to be equivalent to twice the aircraft's life.

"The loading spectrum," says Henry St. Denis, who will direct the tests, "ranges from -3 G—somewhat similar to riding an elevator that drops too fast—to more than eight Gs acceleration and includes sweep rates representative of a real F-14."

The same thoroughness of testing also applies for the boron epoxy stabilizer, for this is the first plane to use such a large amount of boron.

Tests of the boron stabilizer include static and fatigue runs on two prototype stabilizers. One will be subjected to ultimate load at room temperature and then tested to failure at elevated temperatures. The other will undergo ground vibration surveys at varying temperatures to detect its elastic properties. It will be fatigue-tested to **at least twice its design life** to make certain that it qualifies before the contractual fatigue test program.

"We believe it's a necessary caution to over-test the boron stabilizer," says Les Spence, test director for the stabilizer. "After all, these two boron epoxy stabilizers will be the first production parts designed of boron from the very start."

Continual testing . . . part of the care and thoroughness that make Grumman aircraft outstanding. They're built to do the job . . . and more.

plane GRUMMAN news

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Test check. Henry Piasta of Fuselage Assembly takes a close look at the wing pivot system in order to check clearances of the test specimen.

Display 'lifeboat' at N. Y. Lighthouse

When the next Apollo shot roars toward the moon, a number of people who have never viewed the Lunar Module will be "seeing" the moon lander as it carries two astronauts to the lunar surface. They'll be able to visualize the Lunar Module because several weeks ago Frank Tomori presented a scale model of LM on behalf of Grumman to the New York Lighthouse for the Blind.

Frank, who is also blind and works in Upholstery, Plant 29A, presented the model to the Lighthouse museum so that other blind people, by feeling the LM with their hands, could "see" what the lunar lander looks like.

OAO still seeing stars

During this 10th anniversary year of Grumman's Orbiting Astronomical Observatory Program, as the successful OAO-2 continues its celestial observations 483 miles out in black space, a new Central Control Station is being made ready at Goddard Space Flight Center. It's to handle the next spacecraft, OAO-3, due for launch from Cape Kennedy in September. Two Grumman observatories (the second carrying a Goddard experiment package) will then be in orbit at the same time if all goes well.

They will be programmed a third of the way around the world from one another, Ted Moorman, OAO Program manager, said. Cecile Barker, manager of OAO Mission Operations at GSFC, is getting ready, with his Operations crew, to "fly" the new spacecraft, 24 hours a day. The spacecraft is now going through the final stages of preparation for its acceptance test, presided over by Grumman's John Umstetter, manager of Integration & Test.

The National Aeronautics and Space Administration is so pleased with OAO-2 as it swings into its 17th month of orbiting the earth that it is looking into plans for another, with a larger space telescope. There is also talk of a 120-inch telescope being placed in orbit. Moorman points out that such a one, orbiting beyond earth's atmosphere, could observe stars of the 29th magnitude. (The earth-based 200-inch Palomar telescope can bring in only 24th magnitude stars.)

New discovery in space?

Traces of water in deep space are a possible new discovery made by OAO-2 in recent weeks. The Japanese comet Tago Sato Kosaka was observed by OAO to have a very large head of dissociated hydrogen, and Dr. James Kupperian Jr. of GSFC considers that this observation strengthens the theory that there may be sources of water (and therefore perhaps life) in far space. Kupperian is OAO Project scientist at GSFC.

Another OAO finding is that many galaxies are much brighter in ultraviolet radiation than expected, suggesting that they must be several times farther away, and the universe therefore even more vast, than previously assumed. OAO-2 makes observations in the ultraviolet spectrum.

Reviewing the 10 years of the Grumman-NASA OAO Program, Moorman had a paean of appreciation for the men who began it in 1959-60, when there were many unknowns in space flight. "I wouldn't dare try to name all who have contributed their talents," he said, "but they were real pioneers in Grumman's space effort."

Hal Wexler and Bernie Shatz are the present assistant OAO Program managers, and Chris Witt is Project engineer on OAO-3 and -4. Earl Light is Base manager for Grumman at GSFC.

After the OAO-3 launch in September, there is one more contractual observatory, OAO-4, with the Princeton and University College of London experiments, to be completed. Launch date for that is December 1971.

Year's top winner. Jim Maskulyak of Repro Services, Plant 35, gets a congratulatory handshake from Bill Schwendler, Vice Chairman of Grumman Aerospace, at annual luncheon honoring Employee Suggestion winners. (Photo by Bob Settles.)

Top Sterling award for 1969... and the winner is...Maskulyak

The year's top winners of Project Sterling awards met to dine and chat at a luncheon given April 28 in their honor at the Beau Sejour. They didn't know who was high man among them until Clint Towl, Chairman of the Board, called James Maskulyak of Reproduction Services to come up and claim a silver Revere bowl and $750 in Savings Bonds. The other half of his team, Hebb Greenwell of Distribution Services, has left the Company, but he will also receive a bowl and $750 in bonds. Their winning idea saves thousands of dollars in reproducing work order forms.

"You're here because the Executive Operations Board selected you," Charlie Solarski, head of the Employee Suggestion Office, told the winners, noting that their rewards were based on benefit to the Company, originality, and nature of the suggester's job in relation to his suggestion.

President Lew Evans told the group that the Grumman name is associated in Washington with "Sterling," and to make the point he cited the A-6 and LM-7: "The A-6 has been selected as a good example of how to proceed to a contract and then get the contract. . . . And LM is known all over the world for quality—the result of this kind of effort. We're proud of these guys here today and what they've done."

"The big projects Grumman seems to be able to handle. It's important that we also be able to control small projects at the small profit, too," commented Senior Vice President Bill Zarkowsky. "Let's keep going." Zarkowsky is chairman of the Executive Operations Board.

Three $500 awards

Among the others selected for yearly awards, the team of Ron Sup and Frank Weiss of the Press Department, Plant 3, who suggested using plastic shims to form honeycomb core details, earned silver bowls and $500 in Savings Bonds. Work on testing OAO solar cells earned similar awards for Vincent Falcone of Electrical Power Systems, Plant 41, and Harry Hennessy, Lab Test & Development, Plant 14. Robert Castater of Quality Control, Cape Kennedy, was to receive $500 in bonds and a silver bowl.

Third-place awards of $100 in bonds went to three individuals and two pairs for good ideas: Rocco Catania, Shipping, Plant 36; Robert Cruz and James Toscano, Inspection, Plant 3; Peter Kibbel, Engraving, Plant 3; Robert Maiewsky and Avido Quinn, Engraving, Plant 3; Joseph Giannone, QC Lab, Plant 10.

Guests at the luncheon, in addition to Clint Towl, Lew Evans, Bill Zarkowsky, and the winners, included Bill Schwendler, Dick Hutton, Bob Hall, Corky Meyer, and Oscar Olsen.

A new group of monthly Employee Suggestion winners has been announced by Solarski's office. Vincent Gonzalez of Facilities Engineering, Plant 30, earned $1,100 in Savings Bonds for suggesting that one year's supply of recording charts be procured with a call-type purchase order from one, instead of several, sources.

An award of $800 in bonds went to a foursome who had a money-saving suggestion on the F-111. They are Edward Fischer, Sub Assembly, and Patrick Moriarity, Final Assembly, both Plant 36; Carl Wintersteen and Len Boegel, F-111 Liaison Engineering, both Plant 1.

Other April winners were: Charles Randazzo and Thomas McKenna, Final Assembly, Plant 36, $400; William Eliezer, Support Equipment Production, Plant 2, $200; Richard Arpen, Final Assembly, Plant 36, $150; Gertrude Schleichart and Kevin McIntyre, Instrument Fabrication Repair, Plant 12, $150; Amelia Musco, Typing Pool, Plant 35, $125; Raymond Kelp, Fiberglass, Plant 27, $100.

Earlier winners

Recent high-money winners in the Employee Suggestion program, with a top award of $600 in Savings Bonds, were Tom Haller of Production Control Management, Plant 5, and Bob Evans of Upholstery, Plant 29. Yards and yards of dacron sailcloth were at the heart of the matter.

As Haller explains it, the mockup of the Lunar Module cabin in Plant 5, like the real thing, uses fabric stowage bags, instead of lockers, for containing food, boots, and the other items that need to be stored for a lunar mission, real or simulated. Haller and Evans suggested that a sturdy but less expensive sailcloth be substituted in the mockup for a white fabric called Armalon, which is used in the real LM. The sailcloth proved adequate for mission simulation purposes, and the pair received their award for a saving of thousands of dollars.

Bond awards of $500 were presented to Steve Samuels of Instrument Fabrication Repair, Plant 5, for the redesign of an Ampex tape splice detector to eliminate mechanical transient spikes; and to Erich Ulm of Ground Support Equipment in Plant 55, Savannah, for suggesting that DITMCO test equipment be permanently installed in the Gulfstream II workstand.

Nigl, Gabriel share

Other awards included: $350 to August Nigl and Joseph Gabriel of Propulsion Component Test, Plant 2; $150 to Clarence Woods, Tool Fabrication - Jigs & Fixtures, Plant 2; Andrew DeMarco, Machine Shop, Plant 3; Warren Smith, Hermon Lee, and Johanna Conners, all Electronic Repair, Plant 33; $100 to Douglas Halsey, Machine Shop, Plant 32, Sag Harbor; Francis Conway, Machine Shop, Plant 32; Charles Randazzo, F-111 Final Assembly, Plant 36.

$75 to Walter Spindler, Honeycomb, Plant 3; Glen Riley Jr., Machine Shop, Plant 56, Glen Arm; Theodore Scalzo, Ralph Jamison, and Walter Goebel of Electronics Test, Plant 7, Flight Avionics, Plant 8, and Electronics Inspection, Plant 7 respectively.

$50 to Adolph Vnook, Production Control, Plant 3; Joseph Heberlein, Facilities Maintenance, Plant 12; John Woodworth, Machine Shop, Plant 5; Nathan Mannino, Instrument Fabrication Repair, Plant 5; William Thaler, Methods Engineering - Space, Plant 5; Emil Calabria and Charles Hanemann, Machine Shop, Plant 5.

Craig Kavafes — he 'journeys' through space, sea around us depicting future ideas

How could Craig Kavafes possibly have guessed, when he signed on as an artist with the Company in 1957 that he would be painting moonscapes, astronauts, the world's first lunar landing craft, and many, many highly technical, and often secret, Grumman products? This man of talent must have surprised even himself

in the 13 years he has been with the Company. He has mastered outer space and underwater scenes as gracefully as he has the vehicles that travel through them.

For more than three years he served as a Seabee in World War II, where to his fellow Seabees he was doubtless an object of some wonderment as he went about sketching airplanes and oil drums and tropical scenery whenever a lull occurred.

As a boy he had commuted from Woodside to the High School of Music and Art in Manhattan for four years. After he came home from service, he tried a couple of art schools and didn't like them. Eventually, though, he found what he wanted in the New York Phoenix School of Design, from which he graduated, cum laude, primed to become an art director.

But his love was planes. So, after some interesting jobs in Manhattan, he put together a special portfolio and hied himself to Grumman, where he joined other artists in the newly organized Presentations Department.

'One of the best'

His present Grumman studio on the Plant 5 roof which he shares with Dave Komives, also of Presentations Services, was originally designed as a flight tower. With its 360-degree view and natural light, plus air conditioning, it is everything Kavafes could wish for. Here, surrounded with orderly files and an array of paints and brushes, he has the room to spread out the engineering drawings and sketches and notes that are the basis for his paintings.

"He's one of the best in the business," says Dick Clark, assistant manager of Presentations Services. "Very quick at grasping new conceptions. It's not easy: sketches on the backs of envelopes, engineers waving their arms. . . ." And changes! Craig says he has lost track of the number of modifications he has incorporated into paintings of the Lunar Module. But he has kept it up to date, and his rendering, in color, of a LM in space graced the cover of The New York Times Magazine on February 23, 1969.

Last fall, at the reopening of The American Museum - Hayden Planetarium, in New York City, 43 of Craig's space-age paintings were featured, and the Smithsonian Institution has 26 of his prints on space and oceanography for a current loan exhibition. In 1968 the National Aeronautics and Space Administration had a show of his work, and the National Geographic is using some of his space paintings in foreign language movies.

(Photos by Bob Settles)

At home, where he does occasional free lance work, he has his own studio. Craig and his wife, Helen, and daughters Susan, 17, and Debra, 13, live in Centerport, near the water, quite surrounded by paintings he has done for his own pleasure. He's won many awards in fine art shows, has exhibited in many galleries.

To Craig Kavafes, happiness is poking into waterways and inlets of Long Island with his little skiff and a camera, then going home to his studio and painting what he has seen. He likes scuba diving, too, and the other-worldliness of sailplaning. But for the daily job, give him a future plane, a new space ship to bring into being "from sketches on the backs of envelopes and engineers waving their arms," and he's one happy man.

Navy, Grumman look at E-2C with emphasis on ILS program

With prospects looking good for an E-2C production contract this year, a series of meetings at Plant 35 the week of April 27 was of utmost importance; Navy and Grumman Support personnel were reviewing the Integrated Logistics Support (ILS) Management Program for the E-2C.

ILS means that the customer (in this case, Grumman) promises to provide the elements needed to keep a weapon system operable. Every Navy weapon system has to have such a program. The E-2C is in the midst of a development contract right now, with contracts for production of 28 or more aircraft anticipated. ILS is concerned with assuring availability of this highly sophisticated airborne early warning plane. It involves maintainability, spares and repair parts, tools, test equipment, transportation, technical manuals, training, funding, and much more. "Logistics" is a very big word.

About 80 Navy and Grumman personnel met at Plant 35 under the chairmanship of Lt. Cdr. Frank M. Graham, assistant Program manager for Logistics for the Navy on the E-2C.

Commander Graham was on the E-2A/B Programs for four years, and, since mid-1969, has served as APML in Washington on the E-2A/B/C. He flies the E-2 himself.

Tony Italiano, Grumman E-2 Support Program manager, and Herman Wenz, deputy, were co-chairmen of the meetings at Grumman. Program director is Julie Cohen, and the E-2C Program manager, Bill Barnard.

Plan E-2C ILS. Integrated Logistics Support meetings on E-2C drew (L to R) Tony Italiano, E-2 Support Program manager; Julie Cohen, E-2 Program director; Capt. Tom Quinn, commander of Carrier AEW Wing 12, NAS Norfolk; Lt. Cdr. Frank Graham, asst. Program manager for Logistics, Navy, Washington, D. C.; Bill Barnard, E-2C Program manager. (Photo by Marie Trimborn)

Aquatic Club plans big splash party

There's no doubt about the world changing. The Grumman Aquatic Association lists on its calendar of events for June 19-21 a weekend splash at the Rocking Horse Ranch, Highland, N. Y. The featured attractions will be scuba diving, swimming, fishing, water skiing, and boating. They will also have some horseback riding. The cost will be $45 for members, $51 for non-members, and these fees include all meals, accommodations in air-conditioned rooms, and private baths and TV. Information may be secured from President John Reeves, Ext. 2002; Joe Grella, 9822, Lynn MacDonald, 1780, or Ivan Howard, 87497. A deposit of $15 is requested by June 5.

Meanwhile, the Aquatic club is setting up a full schedule. The group will meet May 23 at the Larkfield Suburban Club, East Northport, when Instructor Jim Moran of the North Shore Diving Center will brief members on the scuba diving.

Finding a place for history

Grumman Aerospace Corporation recently authorized a Center for the preservation of Grumman historical material. Documents, photographs, memorabilia, voice tapes, films, and film clips on Company products, people, and facilities will form an important part of the Center's collection. Naturally, items on early days of the Company are the most sought after.

If you have any material that in your opinion is of historical interest and that you are willing to lend or donate to the Center, write or phone Andy Hubbard, Company historian, Plant 28A, Ext. 2401.

Insurance note

Effective May 1, employees who are terminated as a result of a reduction in force will be provided with an extension of medical insurance.

The Grumman Group Medical Insurance (hospital, surgical, and major medical) will be continued for 31 days following an employee's date of reduction-in-force termination.

The added coverage will apply only to those persons who were unemployed on the date of disability and were *not* covered by any other individual coverage or group insurance.

Life insurance, except for double coverage on accidental death, is automatically extended for 31 days following termination in all cases.

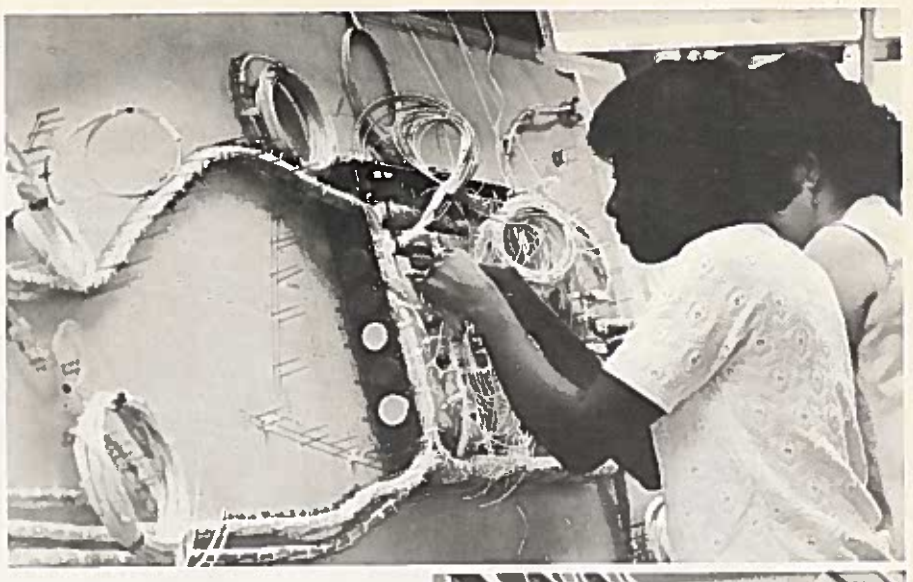
Name McElhany to new post

President Lew Evans has announced the appointment of Boyd McElhany as Western Regional representative - Customer Liaison for Grumman Aerospace, responsible for identifying and developing new business opportunities for the Corporation. He is at 547 Emerald Bay, Laguna Beach, Calif., and may be reached at present on 714-494-8632. John Norris is the new manager of the Grumman West Coast Office, where he may be reached on 56-213-322-6995. He reports to Corky Meyer, Vice President - Product Operations.

At Syosset, Harold A. Kressly is now director of the Electronics Production Center, Plant 33, to organize and direct a Company-wide effort to utilize the capabilities of the Plant 33 complex to its fullest extent. He also reports to Corky Meyer. His extension is 3191.

In order to insure a smooth transition plan for the F-14 from design (Bethpage) through development test (Point Mugu) and into the product test phase (Calverton) with the best use of all resources, Joseph G. Smith has been directed to coordinate the planning for all F-14 Program areas. The goal is to deliver a combat-ready system "on schedule and cost." Smith will be in Plant 15, Ext. 1038. He reports to Vice President Mike Pelehach for Program interface and to Vice President Corky Meyer for functional department interface.

Jim Conners, Vice President - Operations, Grumman Data Systems, has named Robert J. Wilk manager of Technical Security, responsible for developing and applying appropriate security techniques and practices uniquely related to computer technology. Wilk is on Ext. 2945.



Savannah scenes. **At Plant 55, where the Gulfstream II takes shape, many, many types of assembly operations go into producing the twin-jet corporate transport. Here are three of them. Above, Alice Roberts and Olivia White wire harness for an electrical assembly in the GII cockpit, while at right, Benny Gary is bucking rivets on a skin for the aircraft's fuselage. Below, John Hieronymus operates a Drivmatic riveter, also on a skin for the GII fuselage.**

CALENDAR of events

Notice of events for Period May 22 - June 12 should reach Plane News by **Tues., June 2.**

Amateur Radio Club: Wed., May 20, 5 p.m., Plant 5 Cafe. '70 Field Day plans. Emmett Goodman, Ext. 87125.

Amer. Inst. of Ind. Engrs.: Wed., May 13, 8 p.m., LICO, Bldg. 1, Rm, 210, Old Country Rd., Hicksville. Barnett Frumkin, on "Know Your Customer to Sell Ideas." Art Nelsen, Ext. 2050.

Amer. Prod. & Inventory Contr. Soc.: Tues., May 19, 6:30 p.m., dinner, Holiday Manor, 345 Hicksville Rd. Arnold Savitt of Hazeltine Corp. on "Prod. Control in Defense Electronics." Reservations, Norm Heilweil, Ext. 1855.

Assoc. for Computing Machinery: Tues., May 19, dinner 7 p.m., King's Grant Motor Lodge, LIE, Plainview. Spkrs., panel on "Mgmt. Outlook of Computing Techniques in the '70s." Hugh Winton, Ext. 6351.

Aquatic Assoc.: Tuesdays, 7:30-9, Larkfield Suburban Club Pool, swim session. John Reeves, Ext. 2002.

Chess Club: Tuesdays, 5 p.m., Plant 3 Cafe. Tournament, games. C. Wilkie, Ext. 9941.

Coin Club: Wednesdays, 12:05-12:50, Plant 25 Vendor Conf. Rms. Irv Atkins, Ext. 1874.

Duplicate Bridge Club: Thursdays, 5:45 p.m., Plant 3 Cafe. Reserv. not req. Partnerships arranged. Bernard Holland, Ext. 9083.

Ex-Service Men's Club: First Monday of month, 6:30 p.m., Plant 28 Audit. Exec. & gen. meeting. Northeastern Cadet Corps every Fri., 7:30 p.m., Co. A Cherry Lane School, Carle Place, boys from 10 yrs. H. Dong, Ext. 7525.

Family Campers: Fri., Sat., Sun., May 15, 16, 17. Pine Grove Camp Site, Jamesburg, N. J. Harold Mahnken, Ext. 1765.

Fencing Club: Wednesdays & Fridays, 5 p.m., Plant 30 Cafe. Joe Campisi, Ext. 1134.

Horseback Riding Club: Every Sun., 11 a.m., By-Ways Stables, Round Swamp Rd., Huntington. Caren Carlson, Ext. 2725.

L.I. Ind. Nurses Assoc.: Thurs., May 14, 6 p.m. cocktails, Swan Club, Glenwood Landing. August DiFlorio, humorist. Mary Gise, Ext. 3723.

Research Lecture Series: Thurs., May 14, 4 p.m., Plant 35 Conf. Rm. 1A. Mitchel Bertram, hd. of Hypersonic Fluid Mech. Branch, on "Hypersonic Experiments w/Viscous Interacting Vortex Flows." Secretary, Ext. 2165.

Rod & Gun Club: Wed., May 27, 8 p.m., John's Oasis, Hazel St., Hicksville. Film, "Story of Fish. in N.Y." Warren Strittmatter, Ext. 1234.

Soc. of Aero. Mat'l. & Process Engrs.: Tues., May 12, 5:30 p.m., happy hr., 6:30 p.m., dinner, King's Grant Motor Inn. Robert Pinkney of Boeing Vertol. Caren Carlson, Ext. 2725.

Soc. of Mfg. Engrs.: Mon., May 11, Bklyn. Poly Grad Ctr., Rte. 110, Farmingdale. Education ngt., HS Design Contest awards. Mike Hirsch, Ext. 1012.

Stamp Club (Bethpage): First 3 Wednesdays of month, 5 p.m. Plant 30 Cafe., swap. circuit bk. sales, auctions. Harold Haug, Ext. 3473.

Stamp Club (Calverton): Wed., May 13, noon, Conf. Rm. Plant 6. Disc. on philatelic subj., prizes & trade. Floyd Franklin, Ext. 57-384.

Toastmasters Club: Wednesdays, 6 p.m., Town and Country Diner, Syosset. Pub. speak. prac. Geo. Breen, Ext. 1651.

Ad supplement

They're coming, they're coming. The classified ads will be published in a special ad supplement next Friday, May 15. So if you're looking for a boat or a lawnmower or a real bargain in some dandy modern furiture that somebody else's wife is replacing with antiques, watch for the Plane News classifieds.

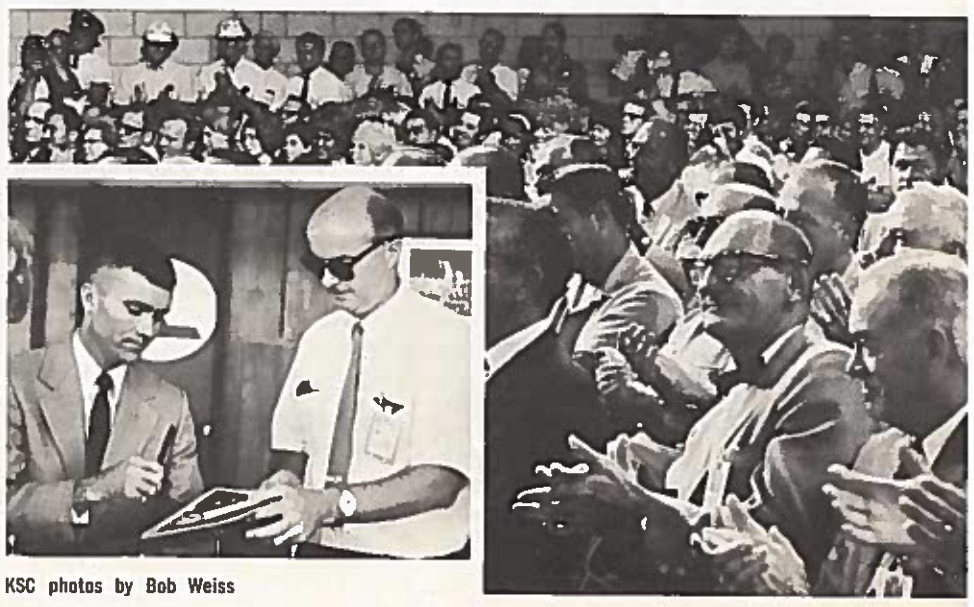
Bethpage photos by Walt Hudson

HOMECOMING!

"If we don't do anything else, let's get back up to Grumman and say 'Thanks'."
— Jim Lovell

"I hope to have another chance to fly the LM, and I'm just as optimistic for the next one as I was for LM-7."
— Fred Haise

"You know there was an awful lot of teamwork on the ground . . . but with Apollo 13, there was one brief moment when all the people of the world were united."
— Jack Swigert



KSC photos by Bob Weiss

Lovell, Haise, Swigert get thunderous welcome to Grumman

(Continued from page 1)

That was the tone of the meeting, favored by summer-like weather.

People began to filter in early. Some were on hand at 11:15 a.m. as cameramen were readying their equipment. A few minutes later, Al Kordula's band started, "American Patrol," "On A Clear Day You Can See Forever," "Skyliner" —and the one that really struck home, "The Age of Aquarius."

The crowd grew in size. By 12:15 the restlessness, the charged air of expectancy, was almost tangible. Some 10 minutes later a ripple of applause came from the area near the flight tower. And as people craned their necks to see whether the astronauts were close by, there was a curious hush . . . soon broken as a group of people, near the roped-off corridor through which the men would pass, identified the trio. And then they were there, on the bunting bedecked dais, waving to the crowd.

Tour of plants

The men, who had toured several Company plants—1, 2, 5, 14, 25, and 39 in Bethpage, and the Kennedy Space Center on Monday the fourth of May—showed no signs of fatigue, though they'd been through the congratulations mill many times since their return and were booked, May 5, for an afternoon trip to Houston and an evening flight to Los Angeles. Hardiness seems an attribute of astronauts.

Once the brief introductory remarks were made by Butch Voris, director of Public Affairs for Space, Clint Towl moved to the microphone: "It's good to have the crew of Apollo 13 with us today." Everyone agreed.

He alluded to Alan Shepard's Freedom flight "nine years ago today," and then assessed the Apollo 13 mission as one that will "stand us in very good stead for building the space shuttle." Then he introduced Captain Lovell; and who could disagree with his opening line—"Ladies and gentlemen, it is indeed a pleasure to be here today—and a great pleasure to be back on earth, believe me!"

He continued:

"We thought, when we were out there floating in the Command Module in the water, 'If we don't do anything else, let's get back up to Grumman and say "Thanks".' And so we're here, and I've brought Jack and Fred because this mission was a teamwork effort, a combination of three people — plus many thousands on the ground; and there were many of you at Grumman giving information back to Mission Control helping to get us back home."

For Haise, being at Grumman was almost homecoming. "I almost feel I belong down there in the audience," he said, in referring to the long time he's spent with Grummanites on the LM effort. He was "present at the creation," so to speak, in times that "were not so rosy." Yet, despite the initial frustrations, the goals were being met by the time LM-3 came along. Then Haise recalled the recent past:

"And then we came to this 'incident' —and we had to throw away the books and depend on fellows like Tom Kelly and Howard Wright, who I understand were taken out of school for assistance in getting us back. Lots of people worked around the clock. (I sure hate to think Tom and Howard were missing their schooling, though . . .)

"Procedures that usually took months were arrived at in a matter of hours. After the Service Module went, we were very dependent on what we had left, which was the LM and the Command Module. Obviously, you all did a tremendous job. The LM was perfect, and was performing twice the requirements of any previous module. And then, too, the Command Module came to life, from its wet and cold powered-down situation, and we had the most accurate splashdown of the Apollo Program.

'Just as optomistic'

"I hope to have another chance to fly the LM, and I'm just as optimistic for the next one as I was for LM-7."

That optimism pervades the crew. And so, too, does an ease of response—and a flair for hitting the right key. Listen to the words of Swigert:

"This is just my third trip to Grumman. I've been on the Command Module at North American the same as Fred has been with LM. But after our 'mishap,' I said when Jim and Fred visited Grumman I wanted to be along to thank you for your dedication and conscientious effort to get us back.

"And here's the greatest tribute I can pay. As the mission droned along, hour by hour, I grew to love the LM as much as the Command Module.

"In a lighter vein—I must be the only Command Module pilot who has more time in the LM than in the CM.

"You know there was an awful lot of teamwork on the ground, with NASA and all the contractors, but with Apollo 13, there was one brief moment when all the people of the world were united!"

And perhaps he was right.

If we, here, thought we had gone through an emotional wringer listening to what was going on in space, hoping, praying . . . And now to see those three men, jaunty, self-possessed, and so confident: They are a special breed.

President Lew Evans stepped forward and remarked:

"I've been sitting here considering what I really should say, and I have these two thoughts: 'How glad we are you're back!' And without all the controllers on the ground, we would have had an accident. All of you were superb.

"But we are getting things backward. Big Jack Swigert, come here. We have decided to make you honorary Lunar Module pilot.

"Now Fred Haise: For four long years this gent has helped us build the LM. We're proud to have you with us. This is to the real lunar pilot.

"And now to Commander Lovell, who is really a captain but is commander for this group: On behalf of this mob out here, I take great pride in giving this pin to you."

Special presentation

Lovell called on Haise to present Evans with the serial number plate flown on Aquarius and LM-7 "in appreciation for the vehicle you gave us."

"And one other thing here," Haise added. "The press has quoted me as saying that I wish I had LM-7 for my back yard. I'll tell you something. My wife wishes she had it to put in the **living room.**

"We couldn't bring all of the LM back, and time was running out as we neared the time for splashdown. (Jim saw the earth getting bigger and bigger.) We did manage to bring you back this armrest, with a note that says, 'A part of Aquarius, LM-7, returned to GAC personnel in appreciation for a job well done. From the Apollo 13 crew, James A. Lovell, John L. Swigert, Fred W. Haise'."

It had been a brief but memorable visit, and many paused before leaving the airfield to watch the astronauts fly away in a Gulfstream. There was pride in workmanship, for as Lovell said about Aquarius, "She was a good ship."

Another of Lovell's comments may be stored away for a while, too:

"Thanks again for your work on Aquarius. We just wish it had had a heat shield so it could have come on through."

Another salute!

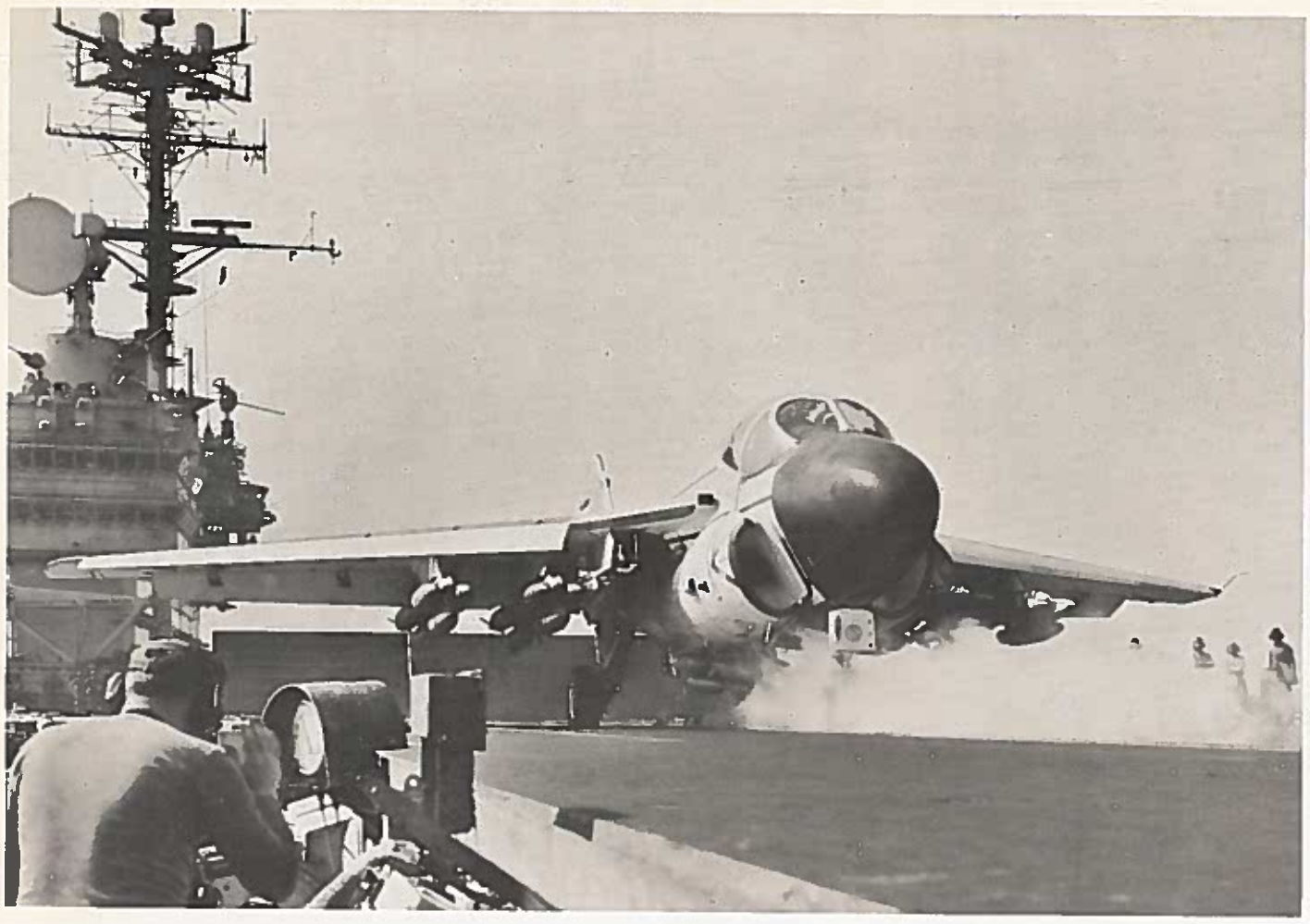
"I remember your saying at Houston, 'Quit sweating. Everything's going to be all right.' Thank you, Al." And with that, President Lew Evans gave Al Beauregard, LM-7 Spacecraft director, a handshake hearty enough to convey appreciation to the whole Grumman crew who supported the Apollo 13 mission.

The meeting took place in the Board Room, Plant 5, a week after splashdown. Joe Gavin, director of Grumman Space Programs, was present to bestow a gold version of the lunar landing commemorative pin, and Clint Towl, Board Chairman, to add his warm felicitations.

"Cool-as-a-cucumber" Al was feeling not so cool in the limelight. A modest administrator, he can hardly say enough good things about the whole concerted effort that linked the National Aeronautics and Space Administration with Grumman and the associate contractors on the Apollo 13-LM-7 mission. "Fabulous," he called it.

Although he asserted there was "never a doubt" in his mind that the crew would make it back safely after the explosion and aborted moon landing, he mentioned the concern over their consumables (oxygen, water, lithium hydroxide) and communications. Would they surely hold out?

"What about the use of the LM-7 descent engine for course correction—something it had never been intended for," he was asked. "Oh, that was all run through on the ground in the simulators before relaying the information to the crew. We were sure that it would be all right," he replied. "More harrowing, I think, was that first time, when it had to blast Neil Armstrong and Buzz Aldrin off the moon on the first lunar landing. That's where we held our breath." Beauregard was spacecraft director on that LM, too.



The Grumman Intruder—'a plane for all seasons...'

It was 10 years ago on April 19 that the A-6A took off on its first flight. And it wasn't long before those connected with the program at Grumman realized they had an unusual bird in the nest.

During the next four years, while the A-6 Intruder was put through series after series of exacting trials, that conviction became firmer. Through Naval Preliminary Evaluation trials, BIS, and sea trials, the twin-jet Intruder looked better and better.

Later, in 1965, when things got to be a little sticky in Vietnam, it didn't take very long for the word to get out to the Fleet: The A-6A Intruder is the world's best all-weather attack aircraft, bar none. Even the doubters — those who were apprehensive that the many complex systems within the A-6 could ever be tied together successfully — were convinced: It quickly became (in the words of Time Magazine) "A plane for all seasons."

Exclusive club. A beaming Lt. Cdr. Roger Smith (L), A-6 bombardier-navigator, accepts plaque recognizing his achievement of flying 2,000 hours in the Grumman Intruder. Capt. Bob Mandeville, the Navy's man in charge of A-6s (C), presents the award as A-6 Program Director Bill Trillo looks on. (Photo by Marie Trimborn)

Today, the aircraft is even better than it ever was— and because of its derivatives and refinements, it will be better still. It is, and will remain, the pride of the Fleet.

If all this praise seems mere boasting, the inflated language of the advertising world, then ask the man who flies one. Take, for example, the testimony of Capt. Bob Mandeville, the Navy's man in charge of A-6s, and the first pilot to log in more than 2,000 flight hours in the aircraft:

"The concept of the A-6 Intruder has never changed. The people who designed and built that aircraft picked a real winner."

Or listen to Lt. Cdr. Roger Smith, a bombardier-navigator who's also put in 2,000 hours of flight time with the Intruder:

"The A-6? There's no equivalent aircraft."

Rare bird

What's the Intruder got that no other aircraft has? There's no single, simple answer to that kind of question; many different factors make for its pre-eminence. For instance, the A-6 is the only aircraft with a simultaneous multi-mode radar. While other planes may have terrain avoidance, search, and mapping radar, the Intruder is the only aircraft in existence that provides simultaneous displays on all three.

In addition, the A-6A Intruder has sired a series of special-mission aircraft: A-6B, A-6C, KA-6D, A-6E, and two other derivatives, EA-6A and EA-6B. So pre-eminence is the result of a specialized flock of qualities—all drawn from what Captain Mandeville refers to as "the fundamental capability that was there from the start. . . ."

The A-6 series, then, consists of many things, and perhaps the most vital element is the crew concept. As Commander Smith puts it:

"A crew-concept aircraft is one that is too complex for one man to handle. With the Intruder, each man—the pilot and the bombardier-navigator — is so involved in doing his job that he doesn't have time to think about what the other guy is doing. You just have to have faith in him."

To acquire that sort of faith means training (preferably in a non-combat area) that will result in flight compatibility—that is, enough in-air experience as a team to show an ease of communications. As both Mandeville and Smith see it, "chemistry" controls; an excellent pilot and a highly proficient bombardier do not necessarily add up to a good flight crew.

There has to be faith, too, in the plane's airframe (which Smith says "can't be beat") and complex systems—systems that give Intruder its broad and unique capabilities. At the heart of one of those capabilities is DIANE (Digital Integrated Attack Navigation Equipment), which ties together lots of little black boxes that "automatically" let the pilot and bombardier-navigator know where they are, not generally but exactly, even though neither man visually sees where he is. How exact is exact? Well, on one run, an Intruder released two bombs and each one dropped down a smokestack of a power plant.

DIANE is a versatile gal: She puts an A-6 on course, however dark the night or cloudy the sky; signals when ordnance should be released; tracks terrain to maintain proper altitude; and even leads the crew back toward home base. So, while other aircraft may be grounded, the Intruder flies.

Because of this remarkable capability, the Intruder has often served as an aerial pathfinder, leading other aircraft to a target.

That in itself might seem more than enough for an aircraft to do, but not so. There's more, much more, and it's being done by constant updating of its electronic systems, by improving maintainability and reliability, and by exploiting derivatives of the A-6A. The multi-mission A-6A, then, has "relatives" that pitch in to perform special tasks beyond the scope of the "father" aircraft.

The first relative to jump aboard was the A-6B, whose main job is suppression of SAMs (Surface to Air Missiles). The A-6B carries the Navy's Standard ARM (Anti-Radiation Missile) for locating and identifying targets. Three different configurations are in use, each taking a somewhat different approach to the SAM-suppression problem.

A-6C, dubbed TRIM (Trails Roads Interdiction Multi-sensor), was born of the Southeast Asia conflict. It incorporates electro-optical sensors to make it possible to observe and attack small vehicles carrying logistic supplies under cover of darkness.

To extend flight mission-time, the

Navy has just recently signed a contract with Grumman to modify 48 Intruders to a tanker configuration. These tankers (KA-6Ds) are to be used to refuel A-6s (and other Fleet aircraft) in flight, thus giving the Intruders increased operational capabilities.

New family member

Finally, there's the newest family member, the A-6E, an aircraft that mirrors the latest technology: a new computer, radar, and weapon-release system tied into a video tape recorder. The first of the A-6Es are in production now.

This kind of activity is hardly new to those close to the A-6 program. In fact, change — within the basic design concept—has been one of the characteristics of A-6 work. It's been encouraged, as witness "Operation Feedback." That program, as Captain Mandeville has said, "gives Grumman people a chance to hear the Navy's evaluation of Company products, and it also gives the pilots and air crews an opportunity to meet and talk with the men and women who help build the planes they fly." There's another kind of feedback that's invaluable, too: the day-to-day exchanges of information between service representatives and those doing the flying.

Continuing improvement

In essence, continuing improvement of an originally sound product has been carried out on the strength of analyses of what A-6s actually do (and can't do) and how new technology affects performance. Field experience and design ideas get married via close communications.

The A-6 came into being because of a new type of warfare encountered during the Korean police action. The old rules of the game—huge armies facing one another along rather clearly defined fronts—had to be tossed out the window in Korea. The enemy pursued a different strategic philosophy: He moved small units, usually into isolated regions rather than along a definite front, and he did it stealthily, using darkness and atrocious weather conditions as his shield. The tactics were those common to guerilla warfare, infiltration of men and equipment, and surprise attacks.

Obviously, to meet that kind of threat meant you had to find and hit the enemy at the times and under the conditions he chose. You needed radars, electronic "eyes" to pierce the darkness and the fog and the rain, and guidance systems linked with computers so that flight crews knew where they were—and exactly where the targets lay.

That kind of sophisticated flight package wasn't put together until after the Korean conflict. When it came, it was named A-6.

'Tremendously fantastic'

It wasn't the fastest or loveliest plane ever seen. It wasn't meant to be. But it did what it was supposed to do. It found the target, day or night, in all kinds of weather. Cdr. Bill Small, once the skipper of VA-65, put it this way:

"This A-6 is a tremendously fantastic airplane—the best I've ever flown."

That appraisal was made about three years ago or more, and the aircraft has been significantly improved since then. In addition, a couple of bright, capable cousins have come down the pike since then: EA-6A and EA-6B. The former, being flown by the Marines, is a two-seater electronics warfare aircraft; the EA-6B is a four-place electronic countermeasures plane now in production.

Although A-6As will come to the end of the production line this year, A-6Es will take their place. Soon, A-6As will be modified to become the advanced A-6Es. So the A-6 family continues on. And as Captain Mandeville sees it, that's the way it should be:

"The A-6 is not just an aircraft. It's a national asset."

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Program lineup

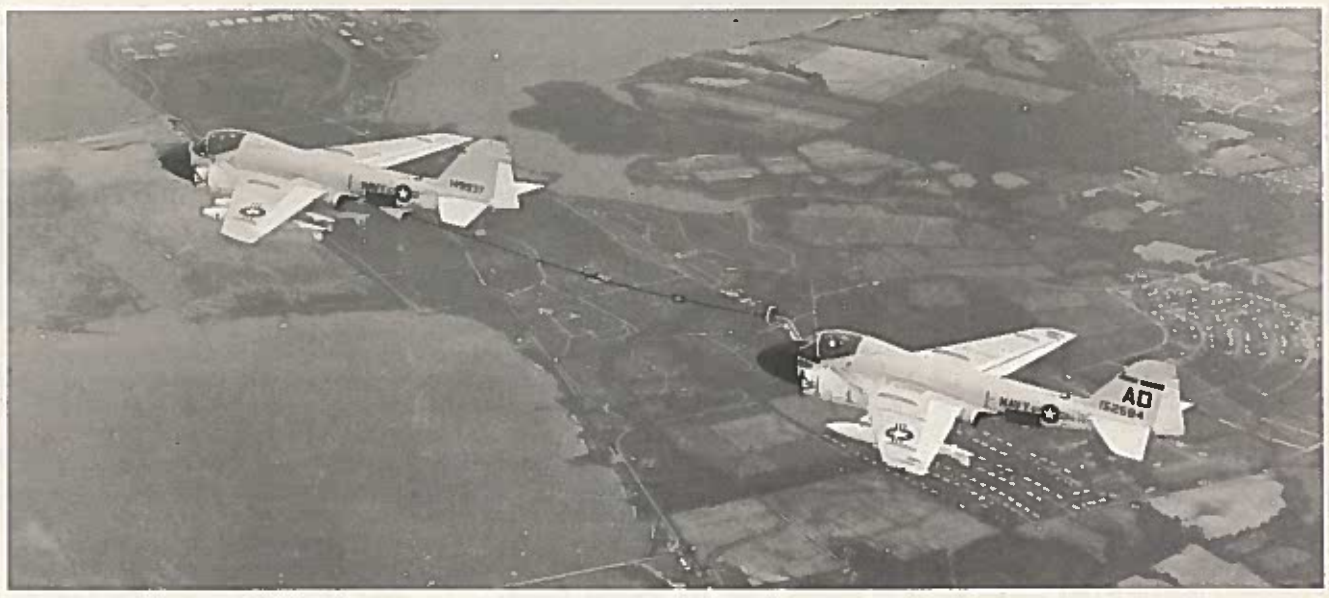
Here's the list of program managers on the Intruder:

A-6A—Pete Remington; A-6B—Dave Finnerty; A-6C—Al Rogers; KA-6D—Ron Peterson; A-6E—Ray Sears; EA-6A—Herb Mosca; EA-6B—Tom Guarino.

Navy awards Company KA-6D contract

The Navy has awarded Grumman Aerospace a contract totaling approximately $6,350,000 for modifying A-6A to KA-6D tanker aircraft. This award provides for a potential order of 48 KA-6Ds to be delivered through December of 1971. The total potential value of the contract award could equal $31 million, depending upon logistic requirements. Grumman successfully concluded first flight of the new KA-6D Intruder tanker aircraft on April 16.

With no new carrier-based aircraft designs scheduled to fulfill the air-to-air refueling role, Grumman Aerospace modified the basic A-6 Intruder into a KA-6D tanker. This aircraft can transfer over 20,000 pounds of fuel at a high rate of transfer, allowing it to support attack and other aircraft on long range missions. The KA-6D tanker will extend carrier-based aircraft combat radius and provide very long-range ferry operations to any geographical location.



ECM aircraft. Suspended in the unique and cavernous anechoic building at Calverton, the electronic countermeasures EA-6B is shown during its development testing program. The cones in background absorb high amounts of electromagnetic energy. Vice President Bob Miller is EA-6B Program director. (Photo by Jerry Costello)

Fit check. Machinist Art Bissett works at control panel for gigantic Cincinnati five-axis horizontal profiler to see that the forward section radome fitting meets the geometry of the part. A tape test is made to check configuration before titanium machining is done. (Photo by John Boles)

Computer, NC tooling combo gives big boost to F-14 effort

NC, APT, RJE—a trio of acronyms that add up to fast action, especially for the F-14 effort.

RJE (Remote Job Entry) is the newest member of the group. When it's joined with NC (Numerical Control) and APT (Automatic Programmed Tool), the result will be a swifter and surer race from design to production tools and parts. Just another puffed-up gimmick? Hardly! RJE Project Engineer Art Leiz dramatizes that:

"An operation that used to take as much as three days to perform can now be done in about two hours. That operation is what we call 'turn-around'—submitting a program to a computer and getting it back as a listing, and on either cards, punched tape, or both."

It is the punched tape that "drives" the machine tool.

But let's go back to the beginning of the job, the engineering drawing. Once that's completed, the process moves into APT programming language; geometry of the part, cutting tool motions, tolerance, and feeds and speeds are written on a "manuscript." This data is key punched on cards and goes to the RJE system at Plant 3 where there's an IBM 360/20 computer that ties into (via high-speed telephone lines) a more powerful 360/75 in Plant 5—a computer that can do more than one million additions or subtractions **in one second.**

"So, what RJE does," says Leiz, "is to help the 'people with a problem'—the NC programming group—get their job done on time and within cost."

According to Angie Galgano, manager of Machining Technical Services, "Large, close-tolerance machined parts as we know them today would be impractical to manufacture without NC machines and computer support."

The RJE output flow is from punched cards to punched tape to an NC drafting machine in Plant 3, where a gross check of the tool path is made. A fine check is made at the next step, the machine tool; the check is actually made by producing a simulated part of either styrofoam or aluminum. The simulated part is inspected and any corrections that may be required are recycled through the RJE to be recomputed with rapid "turn-around." This minimizes non-productive time on the machine tool. And when you realize that there's a total of 102 NC machines—some huge, some small—in Machining Operations, you get an idea of how important NC, APT, and RJE are to the production of parts required for increasingly complex aircraft.

"With these varied capabilities," says Ed Donahue of Galgano's department, "NC programming activity can now be more responsive in supplying machine control tapes to meet critical F-14 manufacturing schedules."

Annual Meeting

On Monday, May 18, the annual Grumman Stockholders Meeting will take place in Hangar 3, Plant 4, Bethpage, beginning at 2 p.m. Grumman Corporate Secretary Larry Rockwell asks the cooperation of those Grumman employees who own Company stock and who plan to attend the meeting.

To expedite the orderly and prompt seating of visiting stockholders, it will be necessary to register in advance. The annual meeting is often the only opportunity that visiting stockholders have of seeing the Company products, and to provide sufficient seating for these, advance registration of employee stockholders is required. Only those persons owning stock as of the record date, March 30, 1970, are eligible to attend.

Grumman personnel who own Company stock and have received a proxy in the mail may pre-register at any Employee Services Office on any working day before May 18. If you have mailed in your proxy and intend to be present at the meeting, check in with your nearest ESO to confirm your intention. A badge sticker will be issued to permit your entrance to the meeting.

Because of the limited space available, stockholders are requested to refrain from inviting their wives, children or friends to the meeting.

Grumman stock obtained through the Company's Employee Investment Plan is held in trust for each individual member by the Plan's Trustee; therefore membership in the Plan does not automatically entitle participants to attend the annual meeting.

Gulfstreams clinch Industrial pistol title

The Grumman Gulfstreams have added another trinket to a huge array of trophies Grumman has gathered in target-shooting competition.

This Grumman "A" team clinched the Sharpshooter title in the L.I. Industrial Pistol League with a 1,036-1,008 victory over Reeves just as the Grumman Hawkeyes were pressing them in the race. Shooting for the Gulfstreams in the deciding match were Herb Wolter (269), Bob Bergman (267), Paul Pantason (254), and Bill Peterson (246).

In the Expert division, the Grumman Mohawks outclassed Pan Am, 1,088-979. Nick Evangelides gained match honors with 275, edging Gene Shreve, who posted 274. Ron Trenkner fired 271 and Fred Wahlert 268 in the high team score.

Short shots

Roger Langevin, Quality Assurance manager of Advanced Space Programs, will speak on "Quality Assurance Requirements of Future Space Programs" at the American Society for Quality Control's 24th annual technical conference in Pittsburgh, May 11-13. . . . Walter Bickmeyer sends word from the Cape to thank all his friends for the much-appreciated retirement party. . . . Capt. Louis Salerno Jr., whose dad is a foreman in Plant 3, and Pfc. George Klein Jr., son of George Klein of Plant 56, Glen Arm, Md., were decorated for valor in combat in Southeast Asia recently. Air Force Captain Salerno, a B-52 pilot, was awarded the Air Medal for outstanding airmanship as he flew successful missions under hazardous conditions. Young Klein, who served in Vietnam with the Marines, won his Navy Commendation for Valor during combat engineering operations when, with disregard for his own personal safety—and despite heavy mortar and small arms fire—he helped to open a supply route for "I" Corps. During that mission, he also discovered 41 anti-tank mines.

Ken Barnes, a Grumman environmental control systems engineer at Kennedy Space Center, was honored by NASA for a cost-reduction suggestion that resulted in annual savings to KSC and support contractors of more than $4 million. Barnes' idea, the top money-saver turned in at the Cape, concerned a filtering improvement in the propellant servicing system at KSC.

Earlier this year, reports Murray Loesch of Plant 1, members of the Grumman Ex-Service Men's Club visited the VA hospital at Northport with the Grumman band. While there, the band provided the vets with a concert, and the Ex-Service Men donated $400 they had collected in last year's Poppy Drive to the hospital canteen.

OBITUARIES

Plane News has received word that death has come to the Grumman personnel listed below. We extend sincere sympathy to relatives and friends.

JOHN M. CHOLEWKA died April 24 at the age of 59. He had been with Grumman since 1943, and he worked in Plant Stores & Distribution, Plant 2. His home was at 20 Hawley Ave., West Islip.

LOUIS MILLAN of Plant 4 Manufacturing Technology - Assembly by Tooling died April 21 at the age of 36. He had been with the Company about 10 months. His home was at 124 E. Broadway, Richmond, S.I.

LEONARD H. WATTS, Support Equipment Production, Plant 6, died April 29 at the age of 61. He lived at 109 Lamplight Circle, Hampton Bays, and had been with Grumman 21 years.

MURIEL H. LOHR of Distribution Services, Plant 2, died May 5 at the age of 55. She had been with the Company 15 months and lived at 74 Jerusalem Ave., Levittown.

He's master

Veteran Cliff Hartnack, coming on strong late in the season, wound up as "king of the hill" in the elite Masters League. He took the individual match-game crown with a .617 percentage, beating out George Ulrich and Jack Nielsen. Hartnack's Cliffhangers, which included Ulrich and Mike Izzi, won the team title when Cliff rolled a four-game series of 879 in the finale. Mike Greggo was high with 256. Hartnack also finished the schedule as series record holder with 905. The only honors he yielded were to Johnny Alston, who held the record game of 275 and high average of 195. At that, Hartnack was only one point behind in the series department, tying at 194 with Greggo. . . . Judge Locke and Charlie Dampf made the Nite Owl noise, with Locke rolling 640 and Dampf exploding a 275 game, three short of Locke's record. . . . John Betterino celebrated the victory of his Mixers in the Black League with a 243 game. . . . Joe Avanzato grabbed honors in the Outpost circuit two weeks in a row, first hitting 244-649 and then 612 as Tony Bezas had high game of 240.

Sholinsky fires 276

Art Sholinsky took the play away from Mark Mellinger in Gray rolling, firing a booming 276 game to break the loop record by 11 sticks. . . . Bill Breehl and Ed Meaney both shot 245s in the Red unit, with top series going to Tom Hansen for 623. . . . Maggie Gaynor broke the gals' game record in the Patchogue Mixed with 223, finishing with 593, showing her heels even to the fellas. . . . The Crabs won the Lunar title, with Hank Zembko's 255 and Bill Rooney's 657 the season's top marks. . . . Steve Kish's 268 and a 241 by George Slavik drew the spotlight in Trader rolling, where Bob Washington hit 268 and Walt Becher 605.

Quinci on target

Frank Quinci waited until the closing weeks to make his big F-111 move, and then did it with a flourish of 278 and 657, both high for the season. Later, Dave Evans bowled 257 and Pete Katalo 244. . . . Andy Goshefski pushed out scores of 246 and 636 to set the stage for his MGs (Barbara Marks, Diana Goldecker, and John Marks) to win the Hawkeye Mixed crown. . . . George Weathers is organizing a summer mixed league at Woodbury Lanes starting May 27 at 7 p.m., and is looking for keglers. Contact him on Ext. 3825. . . . Frank Azzarella broke both Classified standards with 236 and 647.

Tourney champions. Norma Frey (C), captain of the Grumman team, accepts Presidential Trophy from W. J. Pyper Jr. of Republic, following victory in L.I. Industrial bowling classic. Other members of Grumman squad on hand to celebrate were (L to R) Lynn Sowers, Dot Jacobsen, Bertha Siegl, Sandra Ritz, Meg Sheridan, and Chin Thompson. (Photo by Bob Settles)

Grumman girls set Industrial record

Queens of L.I. Industrial bowling—that's the title bestowed on the Grumman women's varsity team that just simply outclassed the field with such a regal performance that they shattered the all-time total-pin record in the 26th annual tourney.

The Grumman girls shot 10,413 for the 12-game event to supass their own tourney record by 152 pins set back in 1964. Grumman was leading all the way through the four-week event and eventually finished 496 sticks in front of runner-up Sperry. With Norma Frey setting the pace at 533, Grumman shot 2559 in the third round and then came back in the final position night to shoot 2570 as Lynn Sowers took the bouquets with a 569 series.

Veteran Chin Thompson and Bertha Siegl were the tournament stars for Grumman, which was the defending champion; it new needs one more tournament victory to retire its fourth Presidential Trophy in the tourney sponsored by Republic. Thompson was runner-up to Pat Zeman of Sperry for individual total-pin honors, trailing by 42 sticks with 2151. Siegl, an early leader, was only one stick behind Thompson. Also rolling for Grumman throughout the classic were Sowers, Norma Frey and Sandra Ritz.

In the earlier Industrial Nite Owl tourney, the Grumman Hellcats finished third, 397 pins behind winning Republic. The Grumman Mohawks were fourth. The Hellcats totaled 10,659 for the 12 games.

Grumman salvaged some consolation in the fact that Ernie Jenkins of the Mohawks rolled the tourney's top series of 633, the Hellcats shot the high team game of 999, and the Mohawks had the second high tally of 997.

The Hellcats shot 2671 in the closing round at Mid Isle Lanes as Ralph Laurino set the pace with 563, while the Grumman star of the night was Edwin Martin, who posted 586 as the Mohawks rolled 2671.

Newcomers pep soccer outlook

Despite shutout defeats in their last two exhibition soccer games, the clouds are clearing for the Grumman Premiers as Manager Scotty Mayors looks ahead to the 1971 season.

Reason for the optimism is the recent addition of several new players, three of whom have had considerable experience in British competition. This trio includes John Castle, Brian Polley, and Rodney Swarbrick. They joined the sqaud with Joop Kolster of Holland and Ron Klein.

Grumman, in its last start with a combined team of Premiers and Reserves, dropped a 7-0 decision to the USMA in their annual trek to West Point. Youth and better conditioning told the story as the Cadets raced to a 4-0 halftime edge. Brian Scheu did excel as he returned to his old goalie post momentarily for the first time since an early season injury side-lined him.

Some of the new talent broke into the Grumman lineup with the Reserves, as the season reached its final stages. The results were that the Reserves surprised by tying Flushing-Holland, 0-0, as Karl Herrnkind got the shutout at goal, with good defensive help from Jim Fedorenchik.

In their last start, the Reserves flared back to upset a strong Lindenhurst club, 4-3, as two of the newcomers, Brian Polley and John Castle, each scored twice. Joop Kolster also figured strongly in the victory with sharp defensive play to assist Herrnkind at the nets.

The Premiers' last start of the season was scheduled for Sunday, May 10, against the Landing club at Glen Cove.

They could possibly move up into fifth place with a victory over the Covers. The Grumman club has three wins, a tie, and eight losses.

Softball lineup lists 25 teams

GAA lifted the curtain on the Grumman lunch-period softball carnival on May 4 with 25 teams racing the bases. Included are four clubs in the Bethpage Nite Owl circuit that play under the Plant 2 lights.

Here's the lineup, including the league commissioners, teams and managers.

Nite Owls: Walt Lampkin, Comm.; Hustlers, Al Liguori; Flyers, Jack Nuccio; S/Cat, Ralph Laurino; Royals, Horace Holloman.

Plant 3: (First lunch) Ole Costello, Comm.; 21'ers, Joe Brennan; Shipping, Charles Merritt; 29'ers, Joe Nogan.

(Second lunch) Jim Weeks and Grant Thompson, Comms.; Mets, Bob McCreery; Jets, Jim Schmidt; Commanders, Rudy Ferro; Jokers, Chris Hasenzahl.

Plant 1: Lou Trapani, Comm.; Flight, John Pscolka; Ecco, Tom Shaller; Invaders, Nick Rutigliano; Misfits, Ken Smith.

Plant 5: Frank Delio, Comm.; Avengers, Jack Thornton; Gnomes, Al Vota; LM Stock, Fred Vitale.

Plant 27: Joe Frisenda, Comm.; AB's, Bill Williams; Snoopys, Sherm Jacobs; Fiberglass, Ang Stefantos.

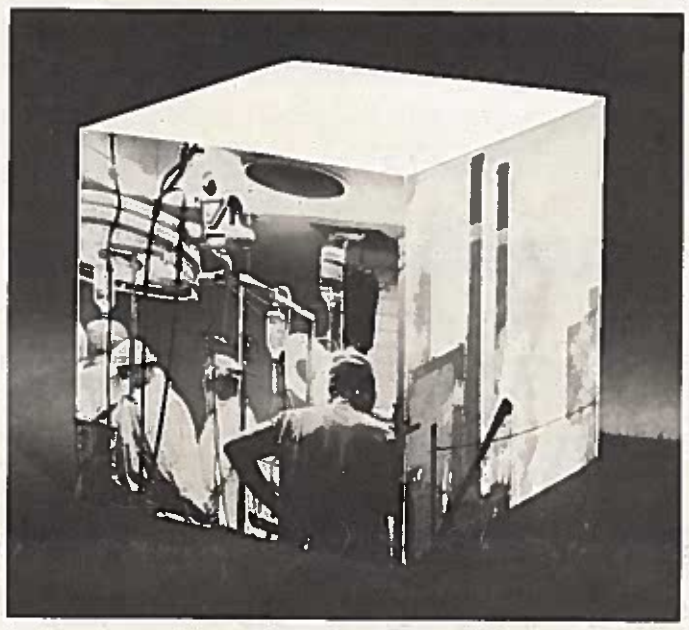
Calverton: Joe Mallins and Stan Misiewicz, Comms.; Bombers, Art Wack; Met Fits, Pete Guido; Whats Left, George Preziosi; Old Timers, Frank DeQuarto.

Johnston, Neilson win

Sam Johnston and Hank Neilson pushed their way to the title in the GAA shuffleboard tourney at Plants 11 and 16. They defeated Vin Bifano and Joe Nardi twice in the finals, the first time by 51-49, 51-54, and 50-36. They won the deciding test 50-32, 58-45.

U. S. Savings Bonds—

building blocks for the future



Photos by Fred Annette

America has come a long way since the signing of the Declaration of Independence, and Americans have been rallying to the call for help ever since. Personal involvement has always been important in preserving the traditions that have made America great.

But sometimes we forget that there are still some things we can do for our country as individuals.

How do we provide for more and better hospitals and clinics, for more and better educational facilities, for preservation of our national resources (including forests and streams), for research into crippling diseases and killers like cancer, for reconstruction of blighted urban areas, for eradication of pollution on land and sea and in the air, for protection of our purchasing power, for retirement of the national debt, for—well, you name it; and the list is long.

Zero in on Grumman's business, too . . . and think a moment. Think about the Apollo Program and our own Lunar Module that proved a centuries-old dream come true: Humans can step foot on physical spheres other than our own, the earth. A national goal was funded by a national effort, and the money came, in part, from U.S. Savings Bonds.

Look again. Look to national defense . . . and the thousands of Grumman aircraft involved in that continuing effort . . . and the public funds that come, in part, from Bonds.

By putting part of your savings away to work for America, you can provide some of the economic strength that it takes to run this great country of ours. And, of course, you'll be helping yourself at the same time. Bonds bring interest and security . . . and a little old-fashioned American pride.

And you can add a little old-fashioned Grumman pride to that, too.

Traditionally, Grumman has a reputation of being a leader in everything it undertakes. Why not in this Savings Bond drive?

Grumman set a national record for a company of its size back in 1955, when over 99 percent were enrolled in the Payroll Savings Plan.

Going for 100%

Last year, only 80 percent of the Grumman people were enrolled in the Payroll Savings Plan. Gus D'Errico of Employee Services, which is spearheading the Bond drive, reported that this percentage has climbed considerably, but more participants are needed. "We're down to the grass roots now. We're speaking to the people personally—explaining the advantages of the Payroll Savings Plan: it's convenient, automatic, and safe. We're trying like heck to make it 100 percent."

D'Errico stressed that if anyone has mislaid the enrollment card distributed a few weeks ago with the paychecks, the authorization cards are available at any of the Employee Services offices.

Most of us would like to tuck a little away every payday.

What happens?

If you're like most people, something always comes up and you decide to wait until next payday and put twice as much away. The next payday comes and you decide to wait and get a fresh start at the first of the month. Suddenly, a year has gone by, and your savings program is still waiting to get started.

Don't let it wait any longer. Sign up for the Payroll Savings Plan. That way every payday an amount you specify will automatically be deducted from your paycheck and invested in U.S. Savings Bonds. By this time next year the little bit you automatically tuck away every payday will have grown into the bankroll you planned on having right now . . . if only you had done something about getting started.

Think about Savings Bonds for a down payment on a home, sending your children to college, or for your own retirement. And you will be helping to build a better America.

You may come away, too, with an exceptional bonus prize. Two dozen bond buyers will win prizes in a special drawing to be held at the conclusion of the drive.

Actually, 28 items are being offered as prizes for Payroll Savings participants. Four are alternate awards, so that every one of the 24 winners will have a selection. The prize list:

Last chance!

Deadline coming up! Should you want to be eligible for the prize drawing for participants in the U.S. Savings Bond drive you must sign up at an Employee Services office no later than May 15. The drawing will be held on May 19. Not much time left. . . .

1. Sylvania stereo, 25" color combination—one year contract
2. RCA 25" wood console color TV—one year contract
3. RCA 25" wood console color TV—one year contract
4. Sylvania 25" console color TV—one year contract
5. GE portable 18" color TV—one year contract
6. Westinghouse duplex refrigerator, frost free
7. GE American double oven range
8. Sylvania stereo-radio-phono combination
9. GE washer and GE dryer
10. GE 14 cubic foot two door frost free refrigerator
11. GE 16 cubic foot two door frost free refrigerator
12. Sylvania stereo AM-FM combination
13. GE 16 pound automatic washer
14. GE 16 cubic foot upright freezer
15. GE undercounter dishwasher
16. Whirlpool washer - automatic 16 pounds
17. GE electric range, 30"
18. GE 12" port-a-color set
19. GE 23" black & white console TV
20. 19" portable TV with stand
21. 23" table model TV with stand
22. GE automatic portable dishwasher
23. Hamilton gas dryer
24. GE automatic dryer
25. *Polaroid electronic flash camera No. 360
26. *Polaroid electronic flash camera No. 360
27. *Polaroid electronic flash camera No. 360
28. *Polaroid electronic flash camera No. 360

*All with camera-case-flash, recharging unit and color film.

Day in the sun

Bill Sewell of Configuration Planning won the trophy donated by Vice President George M. Skurla, manager of Operations for Grumman at Kennedy Space Center, in the Calloway handicap golf tourney. Sewell and Clark Bridgeman of Engineering both had low nets of 72, with Sewell winning the match of cards.

The links event attracted a field of 96. Other low net players were Gene Mack, 73, and Eugene Thompson, with a 74.

Low gross leaders were Dell Foster, 75, John Vandegrift, 80, and Dick Henshaw, 81.